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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/034,097

01/03/2002

Kaoru Yasumatsuya

011577

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04/07/2004

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EXAMINER

ROSS, DANA

ART UNIT

PAPER NUMBER

3722

DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/034,097

Applicant(s)

YASUMATSUYA ET AL.

Examiner

Dana Ross

Art Unit

3722

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

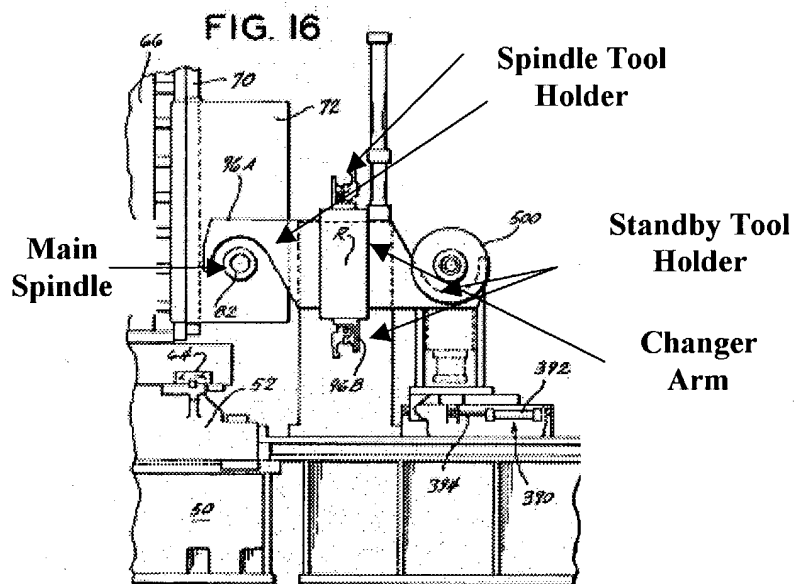
1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 4,306,350 (Kielma et al.) in view of U.S. Pat. No. 5,134,767 (Yasuda). Kielma et al. teaches a method and apparatus for controlling a tool changer which comprises a changer arm 96a having a spindle tool holder for holding a tool attached to a main spindle 82 and a standby tool holder for holding a tool to be next attached to the main spindle for tool change (see figure 16 below) and is adapted to pivot the changer arm to exchange the tool attached to the main spindle in a tool changing position and the next tool in a predetermined position (col. 12, lines 19-52). Kielma et al. also discloses the use of servo motors to control the rotational movement to exchange tools from the spindle 82 through the use of servo systems (col. 14, lines 53-59). The method comprise the steps of preliminarily pivoting the changer arm by a predetermined angle when the main spindle is moved to the tool changing position (fig. 1); further pivoting the changer arm so as to move the spindle tool holder of the changer arm to the tool changing position after the main spindle reaches the tool changing position and causing the spindle tool holder of the changer arm to hold the tool attached to the main spindle (fig. 1); wherein the main spindle is located on the same side as the spindle tool holder of the changer arm with respect to a plane including a pivot axis of the changer arm and the tool changing position prior to the

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movement to the tool changing position (fig. 1), the predetermined preliminary pivot angle is smaller than the predetermined preliminary pivot angle when the main spindle is located opposite from the spindle tool holder with respect to the plane prior to the movement of the tool changing position (fig. 1).



Kielma et al. teaches indexing the changer arm when the spindlehead 72 is moved the tool change position (col. 14, lines 53-59).

Kielma et al. does not disclose the changer arm preliminary pivoting "while" the main spindle is being moved to the tool changing position. However, there is nothing limiting the structure of Kielma et al. from indexing in multiple increments of less than 90 degrees.

Yasuda teaches an indexing system of a changer arm 82 that moves while the spindlehead 24 is moving (fig. 7(a)-7(i)).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to modify the indexing system as taught by Kielma et al. to index at multiple increments with the method and device as taught by Yasuda, for the purpose of reducing the tool changing period and increasing the production time during a machining operation (see Yasuda, col. 3, lines 31-36).

### ***Response to Arguments***

3. Applicant's arguments filed February 26, 2004 have been fully considered but they are not persuasive. In response to Applicant's assertion that Yasuda does not teach rotation of the grip arm 82 "while the main spindle head 24 is moving towards the tool changing position Z138. In particular, the magazine motor 68 only operates to rotate the grip arms 82 after the spindle head reaches the elevated position of Z138", Applicant is referred to figures 7(a) – 7(e), for example. Applicant refers to the tool changing position as Z138, however it is noted that the tool removal position of the main spindle head includes the location Z50.

Yasuda teaches pivoting the changer arm 82 toward the tool changing position (Z50 or Z138). Fig. 7(a) shows the changer arm 82 stationary while the spindle tool holder 48 is engaged in workpiece 91. Fig. 7(b) shows the changer arm 82 moved through rotation by a preliminary pivot angle, approaching the spindle tool holder 48 while the spindle tool holder 48 is in movement while withdrawing from the workpiece towards the tool changing position Z50 or Z138. Figs. 7(c) and 7(d) shows the further pivoting of the changer arm by a residual angle in a direction of the preliminary pivoting so as to move the spindle holder of the changer arm to the

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tool changing position after the main spindle reaches the tool changing position Z50, causing the spindle tool holder of the changer arm to hold the tool 48 attached to the main spindle (fig. 7(d)).


*Conclusion*

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dana Ross whose telephone number is (703) 305-7764. The examiner can normally be reached on Mon-Fri 7:00am - 3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrea Wellington can be reached on (703) 308-2159. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dmr

  
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